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Bureau of Medicine and Surgery

An Open Letter

from

Rear Admiral Bartholomew W. Hogan

The Surgeon General, United States Navy

Reflecting on the passing of another year for the Bureau of Medicine and Surgery, I can not help but feel a strong sense of pride in the accomplishments of the past years and assurances for continued achievements.

It is clear that the record of the past and the promises for the future are due to the cooperation and devotion of individual officers, men, and women of the Medical Department. The value of inspired leadership is recognized—but, accomplishments result from concerted efforts of individual followers.

I extend my personal congratulations and appreciation to all; and, with you, I look forward enthusiastically to the promises of another year.

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**MEDICAL NEWS LETTER**

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Please forward changes of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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### The Need for Reform in Drug Terminology

The nomenclature of drugs has long created confusion in medicine. In addition, some of the least glamorous events in medical history are associated with efforts to obtain excessive prices from use of misleading or special terms for medicinal products.

Although nearly all scientifically trained persons are more or less motivated by the ideal of contributing to the welfare of mankind and many have worked for the betterment of the human race without thought of financial reward, others have been impressed by the profits that may be drawn from industry. As a result, in part, there has been a trend that has led to more rapid development of new medicinal agents. Accompanying the trend is an increasing pressure to protect, extend, and encourage its development. An unfortunate part of the picture is the deliberate confusion engendered by the current system of naming pharmaceutical products.

At present, certain drugs have as many as a dozen names; every one has at least three—a chemical-scientific name given at the time of creation, a copyrighted trade name, and a generic name assigned in collaboration with the Food and Drug Administration and the Council on Drugs of the American Medical Association.

The chemical name specifically identifies the compound and is useful to a few technically trained persons. There is need for better standardization in this area; efforts to educate much wider audiences in chemical terminology should be encouraged for they give pharmacologists and physicians a chance to obtain a better understanding of what the chemists are doing.

Trade names are selected to designate a particular product to serve as important symbols in establishing the drug in the minds of the physician and the public. Because copyright laws protect the term and other laws prevent pharmacists from substituting other—although perhaps chemically identical—drugs for the trade-named article, the manufacturer enjoys a high degree of protection.

The drug manufacturer claims certain advantages for use of trade names in addition to their protection of his interest in a drug. They insure that the physician and, ultimately, his patient will get the drug so designated by the manufacturer. Since the trade-name drug is an index of his reliability, the reputable manufacturer does his best to insure that his product is the best he can make it. Still other advantages, real as well as fancied, are present in the use of trade names.

There are, however, distinct disadvantages to the physician, pharmacist, and others engaged in the use of drugs in employment of trade names. The trade name is not official and is often belittling to the intelligence of anyone with scientific training, as well as being frequently a plain nuisance leading to multiple names for one chemical entity. As an answer to criticisms, many persons believe that a really effective system



of generic terminology might be at least a partial solution. Generic names can be anyone's property and, if properly developed and utilized, could clear up much confusion.

A present disadvantage in use of generic names is that many of the more recent ones have been cumbersome, confusing, and so difficult to remember as to make them almost useless. Another is that their use gives to the pharmacist the decision regarding the brand that will be given to the patient. Unscrupulous manufacturers would benefit from widespread use of generic terminology as established at present; it might be impossible to check all drugs put on the market by such manufacturers. Nevertheless, if generic terminology is made sensible and uniform, it is by all odds the terminology of choice. The following suggestions are, therefore, proposed:

The generic term must be selected and made available for every new drug before it is put on the market. The term must be brief and designed with regard for dignity, visual and oral reception, and mnemonic connotation.

Once the generic term is selected and adopted, it must represent the highest standards available for that product. Once this is done, the physician can be certain of the drug his patient will receive.

The medical profession should engage in a campaign to urge physicians to give generic names prominence in all medical writing, advertising, and usage.

Finally, many medical authorities agree that inclusion of the manufacturer's name after the generic name would in the end give him equal protection and even more favorable recognition than the present undesirable trade name practice. For the belief is growing that a manufacturer's reputation and good will are associated rather with his company name than with fanciful copyrighted and generally inane neologisms. (The Need for Reform in Drug Terminology: Committee on Advertising, The New England Journal of Medicine - New Engl J Med, 263: 21-23, July 7, 1960)

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### Clinical Use of Frozen Red Cells

As early as 1947, it was shown that tissues exposed to glycerol and other polyhydric alcohol subsequently could be frozen and thawed without significant harm. The implication of this observation to blood banking was readily apparent, but practical considerations prevented its immediate translation to methods of red cell preservation. This was chiefly because glycerol must be removed from the red cells before transfusion.

Developed in 1951, the Cohn fractionator for preparation of blood into its component parts was found to possess certain features which made it uniquely applicable to the glycerol processing of red cells prior or

subsequent to preservation in the frozen state. Preliminary studies showed its value; human blood processed in this way could be maintained in the frozen state for periods up to at least 28 months and subsequently transfused with normal in vivo survival. Present study evaluated clinical applications.

Survival of the red cells has varied between 68 and 98% survival with a mean of 83% immediate post-transfusion recovery. No difference in survival characteristics as a function of storage time has been demonstrated. The T/2 decay time has approximated the normal range of 30 days.

The average yield of red cells has been 82% of the original donor's blood. For a period of one year, there has been no decrease in final cell yield that can be related to duration of storage.

Recipient effects have been satisfactory in all cases. The rise in hemoglobin, red cell count, and hematocrit has been equivalent to what would be predicated from the volume of cells transfused. There have been no side effects of an undesirable nature; no chills, fever, urticaria, hepatitis, or hemolysis. It is believed this unexpectedly good tolerance of the blood is not related to freezing per se, but rather to the method of glycerolization and deglycerolization which involves washing the red cells and consequent removal of the intercellular proteins released from dead leukocytes and platelets.

The unique advantages of this method of blood freezing are versatility of the method, whereby the red cells may be suspended as "packed cells" in albumin or as whole blood in the original native plasma; complete bacteriologic safety, reproducibility, and simplicity of method; elimination of donor reaction; elimination of wastage through outdating; availability of rare blood types; and establishment of a true "bank" whereby an individual can store his own blood for later use. (J. L. Tullis, CAPT L. L. Haynes MC USN, LCDR S. Wallach MC USNR, CDR M. T. Sproul MSC USN, et al, Clinical Use of Frozen Cells: Arch Surg, 81: 151-154, July 1960)

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#### Immunization by Live Attenuated Measles Virus

An effective immunizing procedure against measles is urgently needed and would be of tremendous value. Measles is one of the most serious of the common diseases of childhood. Efforts to date have been directed largely toward combating secondary infections that follow in its wake. In recent years, antibiotics have played a significant role in diminishing the severity of these complications. In spite of all efforts, however, considerable mortality still occurs as a result of measles: 490 deaths were attributed to measles in the United States during 1958. Staphylococcal pneumonia which may occur as a complication of measles results in a high mortality rate and is often resistant

to antibiotic treatment. Measles encephalitis remains a dreaded illness with considerable mortality or permanent disability. The effects, if any, of measles on the developing fetus in the early months of pregnancy need further investigation.

Progress in measles prophylaxis had been greatly delayed for many years because of the absence of a simple technique for detecting virus multiplication. Developments over the last two decades have finally overcome these difficulties.

To determine the immunizing properties of live attenuated measles virus, the authors employed vaccine prepared from the Edmonston strain of measles virus, administering it subcutaneously. The antibody content of all sera collected from the test subjects before and after vaccination was determined by the virus neutralization test.

The authors' results in these early clinical trials indicate clearly that it is possible by inoculation of attenuated live measles virus to evoke a significant antibody response. The clinical manifestations varied from cases of considerably modified measles to those with no symptoms. Those who developed modified measles showed none of the more distressing symptoms of this disease. None of the children appeared toxic. There was an absence of cough, coryza, and conjunctivitis. No child showed evidence of the pyogenic complications associated with measles, such as middle-ear infection, tonsillopharyngitis, bronchitis, or pneumonia.

None of the children who had demonstrable antibody at the time of vaccination manifested any clinical symptoms. While the number of children studied is small, these observations suggest that levels of antibody at the lower limit of detection by the virus neutralization test used are sufficient to prevent clinical symptoms and, in some instances, to prevent infection.

Many questions remain to be answered. Will these children remain permanently immune as in the naturally acquired disease? It may well be that some symptoms may indeed be necessary if the immunity produced is to be permanent. May encephalitis follow immunization with attenuated virus as it does on occasion after the naturally acquired disease? One can only speculate on this point. The cause of measles encephalitis remains unknown. If future experience indicates absence of occurrence of encephalitis in chronologic association with administration of live attenuated measles virus, then one of the most compelling reasons for a measles vaccine would be prevention of measles encephalitis.

Another question that arises is whether children so immunized are contagious for a variable period of time. It would seem that since there is an absence of catarrhal symptoms in those immunized—measles transmission is considered to be by droplet method—these children are in all likelihood not contagious.



What is the best route of administration of attenuated measles virus? The children in the authors' study were immunized by the subcutaneous route. Other routes of administration should be explored. It would be of interest to study the effects of vaccine given intradermally or by swabbing of the nose and throat. (J. Dolgin, et al, Immunizing Properties of Live Attenuated Measles Virus: J Pediat, 57: 36-41, July 1960)

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### Humidification Indoors in Winter

Indoor humidity in winter is a greatly neglected and often little known part of airconditioning; yet its importance cannot be underestimated for, at least to some degree, health and comfort depend upon it.

In summer, we have learned to cool and dehumidify the air; in winter, we heat it, but rarely do we adjust the humidity. Why? Undoubtedly, it is partly because of widespread ignorance of the value of humidification. On a so-called dry clear brisk summer day, the humidity ranges around 50% which is ideal for the human body. Much drier than this is not so pleasant. The Sahara Desert averages 23% humidity. Many of our unhumidified homes in cold weather are even drier.

Humidity is the water vapor in the air; relative humidity is the amount of water vapor in the air compared to the total amount which that air could contain. The warmer the air, the more water capacity. For example, when air at 20 F with a relative humidity of 50% is heated to 70 F, the humidity will drop to 7%. It is relative humidity which has to do with health and comfort; in this discussion, the term humidity will mean relative humidity.

The value of adequate humidity in prevention, amelioration, and relief of infection of the respiratory tract is well established. Many industrial concerns have found that, with proper humidity, workers' comfort has been increased and absenteeism due to illness decreased. Asthmatic, chest, laryngeal and even skin conditions are improved.

Therefore, the objective of humidity of around 50% and temperature of about 70 F would be ideal, although humidity as low as 30 to 35% is still beneficial and worth striving for. Definite subjective comfort begins at about this figure.

The crux of the problem is how to obtain this humidity. Many factors are involved. Success depends upon knowledge of the principles, methods, and difficulties involved in the process of humidification.

One important consideration is the total amount of water needed to be added to the air. This factor has to be calculated for the individual unit; the space involved, degree of insulation, inside and outside temperatures—all must be considered. Of the three methods of adding vapor to the air, evaporation, jets and sprays, and atomization, the latter is most widely



used. All three methods present disadvantages. The ideal solution for a specific circumstance can be achieved by consultation with a conscientious engineer who has given thought to humidification. Indiscriminate addition of water to circulated air, or expectation of simple evaporation of water to accomplish adequate results leads to ineffective and uncontrolled humidification. Humidistats, controlled by an outside thermometer to coordinate the great variability of requirements effected by temperatures, are necessary to adequately maintain practical humidification.

Discussion of features and difficulties of humidification is presented, serving as a guide for understanding the function of humidification and the selection of systems suitable for specific situations. The advantages of proper indoor winter humidity to health and comfort are emphasized. (W.J. Hitschler, Humidification Indoors in Winter: Arch Otolaryng, 72: 43-47, July 1960)

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### Closed-Chest Cardiac Massage

When cardiac arrest occurs, either as standstill or as ventricular fibrillation, the circulation must be resumed promptly; otherwise, anoxia will result in irreversible damage. Two techniques may be used to meet this emergency: one is to open the chest and massage the heart directly and the other is to accomplish the same end by a method of closed-chest cardiac massage.

The method of closed-chest cardiac massage developed by the authors during animal studies is simple to apply; it is one that needs no complex equipment; only the human hands are required. The principle of the method as applied to man is readily seen by consideration of the anatomy of the bony thorax and its contained organs. The heart is limited anteriorly by the sternum and posteriorly by the vertebral bodies. Its lateral movement is restricted by the pericardium. Pressure on the sternum compresses the heart between it and the spine, forcing out blood. Relaxation of the pressure allows the heart to fill. The thoracic cage in unconscious and anesthetized adults is surprisingly mobile.

Method. With the patient in a supine position, preferably on a rigid support, the heel of one hand with the other on top of it is placed on the sternum just cephalad to the xiphoid. Firm pressure is applied vertically downward about 60 times per minute. At the end of each pressure stroke, the hands are lifted slightly to permit full expansion of the chest. The operator should be so positioned that he can use his body weight in applying the pressure. Sufficient pressure should be used to move the sternum 3 or 4 cm toward the vertebral column.

Closed-chest cardiac massage provides some ventilation of the lungs, and if there is only one person present in a case of arrest, attention should be concentrated on the massage. If two or more persons are present, one should massage the heart while the other gives expired air respiration.

In the authors' experience, use of this technique on 20 patients has given an over-all permanent survival rate of 70%.

Use of this technique eliminates the necessity for a thorocotomy; the significant value of the method lies in the fact that it can be used wherever the emergency arises, in or out of the hospital, without equipment of any type. (W.B. Kouwenhoven, et al, Closed-Chest Cardiac Massage: JAMA, 173: 1064-1067, July 9, 1960)

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#### Treatment of Tetanus

Tetanus, one of the most dreaded complications of wounds, continues to be a serious clinical problem. Neither its incidence nor its mortality appear to have been significantly decreased in civilian practice during the past 20 years by programs of active immunity.

Large doses of antitetanic serum have been ineffective in preventing death during this violent disease, particularly in those patients with incubation periods of less than 6 days. The military experience of World War II and the Korean conflict has demonstrated conclusively the superior prophylactic effectiveness of tetanus toxoid in producing immunity, but this valuable lesson has not been transferred as yet to civilian life on a broad scale.

Equally disappointing has been the apparent failure of prophylactic antibiotic therapy in wounded persons to reduce the number of cases of tetanus or to alter the course of the disease per se once it has become established.

The prognosis in tetanus is always grave, the issue of life or death is frequently determined by the time the patient is first seen by the physician. Continuing this reasoning, it would appear that no form of therapy would prevent a fatal outcome in one group of patients who had a fatal amount of toxin fixed in the central nervous system, while in another group composed particularly of cases seen during the prodromal period, early diagnosis and prompt treatment could be effective in reducing mortality before a fatal amount of toxin had been fixed.

During the latter part of 1944, the accidental observation was made that thiopental (Pentothal) sodium administered intravenously during a period of tetanic convulsion and respiratory arrest was followed promptly by relaxation of the patient and spontaneous resumption of respiration. Since 1946, therapy employed by the authors has been focused on prevention or control of respiratory arrest by means of continuous emergency care on a 24-hour basis and intravenous administration of thiopental sodium solution.

During an 18-year period (1940 - 1958), 123 patients with tetanus were treated or seen in consultation; none had received active toxoid immunization. Trismus was the most dependable presenting sign, being present in over 80% of the cases. Other signs and symptoms noted in decreasing frequency were headache, stiff neck, dysphagia, increased salivation, increased spasticity of the skeletal muscles, abdominal rigidity, opisthotonos, the classical risus sardonicus, dysuria, hyperactive tendon reflexes, and occasionally, ankle clonus.

The regimen of treatment included prompt administration of tetanus antitoxin to neutralize any circulating tetanus toxin, provided there was no sensitivity to horse serum. Prior to the latter months of 1946, the principal agents used for sedation had consisted of avertin, chloral hydrate, paraldehyde, and several of the barbiturates in intermittent doses. Since then, dilute solution of thiopental sodium by continuous intravenous infusion has been the chief sedative agent. Episodes of respiratory arrest were controlled by use of a 2.5% solution of thiopental sodium at the time of the arrest and in association with artificial respiration if needed. Additionally, continuous and vigilant care on a 24-hour basis by nurse, intern, or medical student was practiced; tracheostomy was often life-saving.

Curare-like drugs were also used in some cases in an attempt to control convulsive seizures. Mephenesin was given in amounts sufficient to meet the patient's individual requirements. Except in rare instances, drugs of this type are no longer used.

Before institution of the current mode of therapy, the mortality rate was 65.1%; subsequently, it has been reduced to 21.2%. The prescribed use of thiopental sodium did not greatly alter the incidence of convulsions and respiratory arrest, but significantly reduced the severity of the episodes and the mortality rate.

The authors' data indicate that effective passive and temporary immunity can be obtained in previously unimmunized patients by 1500 units of tetanus antitoxin, provided it is given within 8 to 10 hours after injury. Recently, there has been a growing belief—not supported by the authors—that 5000 to 10,000 units is a more realistic dose. It is significant that one patient in the series developed clinical tetanus on two separate occasions, indicating that established disease cannot be depended upon to produce immunity.

That development of clinical tetanus in 7 patients following delayed operative procedures or remanipulation of compound fractures long after the initial injury deserves special emphasis. The prolonged viability of C1. tetani was also demonstrated by the authors' ability to culture the organism from tissues excised from the area of an old wound one year after the original injury. An ideal plan of protection is the combined program of active and passive immunization started at the patient's admission for the original injury.



Until universal immunization has been achieved, the main reliance in prophylaxis will necessarily be dependent upon early and adequate operative treatment and prophylactic serotherapy in the unimmunized. Once the disease has become established, successful management is dependent upon early diagnosis, serotherapy, emergency care on a continuous basis, and prevention or control of the convulsive seizures and episodes of respiratory arrest. (W.A. Altemeier, et al, Clinical Experiences in the Treatment of Tetanus: Arch Surg, 80: 977-985, June 1960)

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### Nodular Goiters

During the last 70 years, treatment of nodular goiter has been in the domain of the surgeon. Various reasons—including the possibility of malignancy—have dictated this action. Recently, this attitude has been questioned. In an attempt to arrive at a realistic evaluation of the problem, the authors studied the situation at the Hertzler Clinic and Research Foundation.

Benign Goiter. Between 1920 and 1929 there were 1938 thyroidectomies for benign goiter at the Hertzler Clinic. Of the surgical specimens, 1662 had nodules; 35.5% were multinodular colloid goiters, 10.9% were fetal adenomas, and 13.3% were solitary colloid adenomas. In the period, 1950 to 1959, (20 years after introduction of iodized salt), there were 845 operations for benign goiter; 5.9% were fetal adenomas and 26.7% were solitary colloid adenomas.

Today there are only one-half as many thyroidectomies for benign nodular goiter as there were 20 years ago. Whether this is the effect of use of iodized salt is difficult to determine.

Malignant Goiter. During the period, 1920 to 1959, there were 158 malignancies among 2096 goiter operations; from 1950 to 1959, there were 129 thyroid cancers among 974 surgical goiters. The relative incidence of malignancy increased after 20 years of iodine prophylaxis from 7 to 13%. Furthermore, there has been a marked difference in the types of thyroid cancer—an increase of papillary carcinomas.

Accuracy of Clinical Diagnosis. While most writers believe that malignancy is more common among solitary adenomas than in multinodular colloid goiter, some report a striking preponderance in the former. The authors report that in 206 thyroid malignancies, 6% were found in multinodular, and 13.8% in solitary, nodes.

With the apparent difficult distinction between solitary adenoma and multinodular colloid goiter, the authors reported a correct differential diagnosis in 56%. Some declare that a skilled examiner can readily decide whether nodules are likely to be malignant or benign without waiting for



such late signs of cancer as vocal cord paralysis. Despite the specific interest in thyroid disease for many years at the authors' clinic, they report a correct preoperative diagnosis in 20.3% of 206 thyroid malignancies diagnosed by histologic studies. The clinical diagnosis was correct in 31% of the well differentiated ones. Furthermore, radioactive iodine tracer studies were found to be not totally reliable.

Thyroid Medication in Nodular Goiter. Some enthusiasm for use of thyroid extract in treatment of simple goiter exists; regression in nodular goiter has been reported. However, because of the unconvincing published reports and their own experience, the authors share the opinion of most goiter students in regard to the uselessness of thyroid extract or iodine in nodular goiter.

Conclusions. After 30 years of iodine prophylaxis, the problem of nodular goiter is still present. The primary concern of the physician who examines a patient with nodular goiter is not the incidence of thyroid cancer in the general population. He must decide on the best treatment in each individual case. If the patient is a good surgical risk, the treatment of choice is still thyroidectomy—before toxic or mechanical symptoms develop and before it is possible to make a clinical diagnosis of cancer. (R. P. Stoffer, et al, Nodular Goiter: Arch Int Med, 106: 10-13, July 1960)

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### Ammonia Tolerance in Liver Disease

The first ammonia tolerance tests were reported in 1932. The conclusions of that report, confirmed by other investigations since that time, indicate that in the presence of cirrhosis of the liver the rise of venous blood ammonia after ingestion of ammonia substances is due to shunting of portal blood to the systemic circulation rather than to impaired extraction of ammonia by the liver. The shunting may be effected by intrahepatic and extrahepatic portasystemic anastomoses. Recently reported, the findings of another group of investigators are at variance with the theory of a simple shunting of blood away from the hepatic cells, but indicate actual defective functioning of the hepatic parenchyma.

The authors undertook reassessment of the ammonia tolerance test in patients with various types of liver disease to correlate the test results with clinical, laboratory, and histologic aspects of these disorders.

### Ammonia Metabolism

Ammonia is a key intermediate in the metabolism of nitrogen. The intestinal tract is the major portal of entry; the liver extracts and stores it as glutamine until it is utilized in the synthesis of urea or protein. In

addition, the liver liberates ammonia in the course of deaminating amino acids and degrading other nitrogenous compounds. Consequently, the ammonia content of the hepatic vein represents the sum of the unextracted portal vein ammonia and that contributed by the liver.

Although the kidney is the primary site for excretion of nitrogen and ammonium ions from the body, it also contributes to the blood ammonia level. It appears, paradoxically, that the more ammonia formed in the kidney for excretion, the more "leaks back" into the systemic circulation.

Under normal resting conditions, the peripheral tissues appear to take up a small amount of ammonia. During muscular activity, however, ammonia is liberated in large quantities. In the face of rising arterial ammonia levels, as much as 40% of the arterial ammonia may be extracted by the extremities. Brain tissue also appears to remove ammonia from the blood.

### Ammonia Tolerance Test

Normal Subjects. The author's data indicated that normal subjects were able to metabolize large amounts of ammonia rapidly without evidence of toxicity or a significant increase in the systemic blood ammonia concentration.

Obstructive Jaundice. Patients with obstructive jaundice characteristically showed a normal fasting blood ammonia level and an insignificant rise after administration of ammonium chloride. There was no correlation between the ammonia tolerance test and duration or severity of jaundice, elevation of serum alkaline phosphatase, or degree of Bromsulphalein retention. It appears that patients with obstructive jaundice retain the capacity to clear moderate quantities of ammonia from the blood.

Hepatitis. The mean ammonia tolerance curve in hepatitis consisted of a normal fasting level followed by a small increase in blood ammonia concentration 45 minutes after administration of ammonium chloride. The author's studies confirmed observations of others that abnormal ammonia tolerance may occur in viral hepatitis. There is little doubt that impaired ammonia tolerance may be caused by severe parenchymal damage in hepatitis. However, findings indicate that esophageal varices do exist in acute viral hepatitis and that such portasystemic shunts may offer another explanation for increased systemic blood ammonia concentrations. Furthermore, it is important to note that normal ammonia tolerance may exist despite severe hepatocellular impairment as measured by the usual tests of liver function.

Hepatic Fibrosis and/or Fatty Infiltration. The normal pattern obtained in patients with portal fibrosis and/or fatty infiltration of the liver confirmed the findings of others. Although Bromsulphalein retention was elevated in almost all of them, and increased serum bilirubin levels were present in half, none exhibited evidence of severe hepatic insufficiency or portasystemic collateral circulation. Esophageal varices were not visualized in the patients examined by esophagoscopy.

Cirrhosis. Abnormal ammonia tolerance tests were observed in 59 of the 60 cirrhotic patients studied. The tests were characterized by a fasting venous ammonia level in the high normal range, a considerable rise at 45 minutes, and a partial return to normal at 3 hours. Analysis of liver function revealed no significant correlation between the ammonia tolerance test and the serum bilirubin, Bromsulphalein retention, thymol turbidity, cephalin flocculation, or alkaline phosphatase determinations. This poor correlation suggested that the ammonia tolerance test is not a sensitive measure of the hepatic parenchymal function per se. There was, however, a significant correlation between the degree of ammonia tolerance and the serum albumin concentration. There was no such relationship with the total serum protein or globulin levels. This correlation did not hold for other types of liver disease studied.

The degree of ammonia intolerance also correlated with certain physical findings which are characteristic of cirrhosis: presence of visible abdominal collateral veins, splenomegaly, ascites, and spider angiomas.

There was no significant relationship between abnormal ammonia tolerance and presence of esophageal varices as demonstrated by radiography or esophagoscopy; nor was there correlation between ammonia tolerance and the degree of hepatomegaly, severity of jaundice, or presence of edema.

These findings suggest that abnormal ammonia tolerance is not caused by hepatic parenchymal dysfunction per se, but that it is related to the degree of portal hypertension and collateral circulation as reflected by such findings as abdominal collateral veins, splenomegaly, and spider angiomas.

Portasystemic Anastomoses. Grossly abnormal ammonia tolerance tests occurred in all patients with cirrhosis with portacaval or splenorenal anastomoses. These findings emphasize the role of shunting in the ammonia tolerance test.

The author's studies indirectly confirm earlier reports that ammonia tolerance serves primarily as a guide to the amount of collateral flow between the portal and systemic circulation. Although some impairment of ammonia tolerance may occur in patients with severe hepatic parenchymal damage, the volume of portal collateral shunting appears to be a much more important figure. The test is simple and safe; when used as a screening test it can be reduced to a single blood ammonia determination after administration of ammonium salt. Use of arterial ammonia levels enhances the accuracy of the determination. The test—or modifications of it—may prove to be of clinical value as a "medical" means of estimating the portal collateral flow. (H. O. Conn, Ammonia Tolerance in Liver Disease: J Lab Clin Med, 55: 855-871, June 1960)



### The Right Word in Search of a Doctor

It had to be Mark Twain who wrote, "The difference between the right word and the almost right word is the difference between lightning and the lightning bug." One has but to attend almost any conference of physicians to realize how adept many of them are at by-passing or misusing the right word. I am not considering the "Good Old Doc" who informed me, "He ain't got no pneumonie, I don't think." Only a linguistic miracle could save him.

I am thinking of some, although by no means all, of those whose learning entitles them to teach the young in our medical schools, and who are rightfully leaders of our top-flight medical conventions. A goodly number, of course, carry the perfectionism essential to good medicine into the realm of self expression. All honor to them!

But it must be admitted that we have here an all-too-noticeable trend. It may even be unavoidable. It has been said by several observers that our fund of knowledge doubles every 10 years. Of medical science, it might now be correct to say that it triples with each decade. Keeping up with this happy, if oppressive, burgeoning of medical investigation is essential to the proper care of our patients. It is also essential to our students who must pass the many examinations designed to disclose what they do and do not know. Small wonder that Kultur, and with it self expression, does well to have survived as well as it has. Its place is necessarily secondary. But even in our "best" medical circles, how often it falls flat on its face! Now and again I hear a colleague ask the rhetorical question, "Do I make myself clear?" To shout, "No!" might at the same time be both indicated and out of order.

Let this piece be regarded as a sequel to that medicoliterary gem by my friend the late Dr. Jean V. Cooke. In it he paid his respects to a selected list of words commonly mispronounced in otherwise erudite medical circles. My purpose is to set before any who might be interested certain additional, currently misused words and expressions, plus a few choice violations of orthoëpy.

It is all very well for a poet like Robert Browning to write of "fancies that broke through language and escaped." Even he agreed that some of his own fancies could be understood only by himself and God. But it is positively dangerous for those who contribute to, or teach, or practice medical or other science to (a) indulge in fancies, or (b) to let their scientific facts break through language and escape in such remarks as the former "happens seldom"; the latter "happens all the time."

First, consider the more outrageous conflicts between singular and plural: "The accumulated data suggests . . ." (from the March 1960 issue of one of our pediatric journals). The plurality of "data" escaped both author and editor.



A Health Commissioner writes, "Last year 543 persons died in --- City of an accident," meaning many accidents, not just one holocaust. Thus, he did violence to his own statistics.

Or (another pediatric journal), "The cause of these conditions are not apparent." No comment. "A foci of infection." "A diagnostic criteria," "A polypi." This last was used consistently by a former teacher of mine. How singular can plurals be?

Rather more beguiling are certain spoken plurals which do lip disservice to the classics: Yes, the plural of "basis" is "bases," pronounced "basees"; the plural of "diagnosis" is "diagnoses," pronounced "diagnosees." But hearken now to four innocent words whose plurals are so often stretched to virusees, abscessees, processees, and fetusees. Such violators are obviously linguistic Jackassees.

Now for a few of the more revolting redundancies: "Pericardial friction rub": this is by way of becoming universally accepted. Does friction need a rub added to it, or a rub friction?

"Cut section": O pathologists! A section of anything, even of a pie, is inevitably cut.

"Reduplication": think it over as you say it. Didn't you mean duplication? A reduplicated second heart sound would be positively staccato!

Only in the past decade has the use, or abuse, of "too" for "very" become rampant upon the printed page or the lecture platform. "Penicillin is not too reliable in the treatment of that infection." Just when does a remedy become too reliable?

"She's not doing too well today." Unless you've taken a dislike to her, she could hardly do too well, could she?

Finally, a few random linguistic sins which so easily beset us medicos: Consider, I pray you, the doctor who says, "He hasn't got a temperachoor, I don't think." Yes, he meant to say, "I don't think he has a fever." But how much better if he'd said it.

"Dilatation." Surely, dilation would stretch any orifice just as widely! Let the word go the way of "preventative" and "therapeutical." We don't use the verb "to dilatate," do we?

"DIScharge." This pronunciation when the word is used as a verb. (He was DIScharged from the hospital) is completely unacceptable. As a noun (a purulent DIScharge, for example) it is given second pronunciation, dis-CHARGE being preferred.

I hope you have winced properly, perhaps privately, on hearing "pre-machoor, immachoor, adventissue, terriomyacin, streptomycin."

I trust that the foregoing does not lay me open to the base and baseless charge of purism. I am fully aware that in certain instances the dictionary (for our purposes the Merriam-Webster unabridged, plus the medical dictionaries) has yielded to usage and changed "preferred pronunciations" from, say, "pahliomyelitis" to "poliomyelitis," and even "gladiolus" to "gladiolus."

Even I have yielded to usage in accepting the etymologically "mixed" word "pediatrician" instead of the better "pediatrist." For, lo, the latter has become stilted, even to the point of conspicuousness! This is indeed less important than good usage, or what Dean Briggs loved to call "clean English."

Yes, of course, when we are medically or surgically sick, we should prefer to be in the care of the doctor who knows most about etiology, diagnosis, and therapy, however lacking he may be in syntax and orthoëpy. But surely it is not amiss to plead for graduates in medicine who, like George Eliot's version of Stradivarius, have "an eye that winces at false work and loves the true," who will not be found careless in use of language, any more than in use of stethoscope, head mirror, or electrocardiogram. (P.J. White, *The Right Word in Search of a Doctor*: J Pediat, 57: 149-150, July 1960)

NOTE: Considering the "right word," wouldn't it be a gratifying improvement to employ "physician" rather than "doctor"? Extensive illegitimate usage has compromised the significance of the title for physicians, dentists, philosophers, and others who have academically labored for the designation.

Editor

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### FDA Proposes Labeling Regulations

Stronger regulations to insure that physicians receive adequate information about the drugs they prescribe and to insure the safety of new drugs were proposed recently by the Food and Drug Administration.

The new regulations would:

(1) Require sweeping changes in the labeling of prescription drugs. Virtually all prescription drug packages and printed matter distributed to physicians to promote sale of a drug would be required to bear complete information for professional use of the drug, including information about any hazards, side effects, or necessary precautions. Heretofore, such fully detailed information has not been required in labeling when it was available in scientific literature or, in certain cases, was available to the physician upon request. The only exception in the proposed regulations would apply to frequently used medicines that are commonly familiar to the doctor.

(2) Provide that when safety requires, a new drug would be kept off the market until the manufacturer's representations regarding the reliability of manufacturing methods, facilities, and controls have been confirmed by a factory inspection by the Food and Drug Administration. Such an inspection would verify that the firm can insure the identity, strength, quality and

purity of each batch of the drug. Occasional inspections have shown conditions in manufacturing plants which were contrary to representations made by the manufacturer in his request for safety clearance according to FDA.

Other proposed labeling changes would require drugs for injection and for use in the eyes to bear a quantitative declaration of all inactive ingredients. Labels of all prescription drugs would be required to include an "identifying lot or control number from which it is possible to determine the complete manufacturing history of the drug." Exemptions are permitted where there is insufficient label space, provided the information is given on other parts of the drug package. All labeling bearing information for use of a drug would be required to have the date of its issuance.

Proposed labeling changes, according to FDA, would correct a tendency on the part of some manufacturers to describe to physicians the merits of a drug without giving information regarding its hazards and special precautions necessary for maximum safety and effectiveness.

Commenting on the proposed regulations, George P. Larrick, the Commissioner of Food and Drugs, said: "The large number of new medications has made it increasingly difficult for doctors and pharmacists to keep adequately informed about them. We are hopeful that the proposed regulations will improve the communication of vitally necessary information and bring about a general improvement in drug promotion practices. At the same time, they should furnish a basis for more effective government control where necessary."

Interested persons are invited to submit written comments on the proposed regulations to: Hearing Clerk, Dept. of Health, Education, and Welfare, Rm. 5440, 330 Independence Av., S. W., Washington 25, D. C. by 22 September 1960. (Food and Drug Administration, Dept. of H. E. W.)

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### Everyday Courtesy

(Abstracted with adaptations from an article "The Air Force Clinic" which originally appeared in the Air Defense Command Surgeon's Bulletin, February 1960, and reprinted in the U.S. Air Force Medical Service Digest for May 1960, the rules of courtesy presented are applicable to all areas of contact with patients by all Medical Department personnel. A small amount of cold impersonal, indifferent, or discourteous treatment can disproportionately detract from an over-all high quality of professional care. Editor)

It is always timely to issue a reminder of the need for continuing improvement in the quality of service given in the clinics. Improvement of physical facilities is costly and time consuming. While such projects are

awaited much can be done to reduce the excessive waiting period for patients requiring outpatient treatment. To accomplish this requires close examination of the clinic schedules and appointment system to see that professional talent is being used judiciously. Even then, emergencies will arise that will require scheduled patients to wait. Under these circumstances, they should be told promptly that their treatment will be delayed and approximately how long.

Another area sadly in need of improvement is that of human relations. Establishing good human relations is a combination of many things, such as grooming, attitude, speech, courtesy, and posture. Patients may receive the finest care the medical profession can offer, yet, if they are not properly received and courteously handled when they report for this care, the quality is completely overlooked.

If the complaints of patients in any medical facility were traced to the source, it would be found that in at least four-fifths of the cases, an act of discourtesy was committed at some time between initial contact and the time the patient was seen by the physician. Frequent complaints are damaging to the reputation of the medical facility whether or not they are justified.

One of the first steps to eliminate complaints is to select personnel for duty in the clinic who are neat in appearance and have a pleasant, tolerant, and sympathetic disposition. With these prerequisites, training will make courtesy a part of the natural personality.

Mr. Carnegie has published eight rules for developing courtesy which can be readily adapted:

—Apologize for keeping patients waiting and tell them why they have to wait. This, at least, lets patients know you are aware of their presence in the clinic and if they know why they are waiting, they usually won't resent it. People do not like to be ignored.

—Give cheerful service. You are not doing a patient a favor by seeing him. Medical service is a right for military members and should be furnished in a cheerful manner. This applies not only to personal contacts but also to telephone and written contacts.

—Treat the patient as you would like to be treated. Old stuff? Sure! But can you think of any more important stuff? Philosophers have been talking about human relations ever since the beginning of time; but no rule has been more important than the Golden Rule.

—Don't forget to say "thank you." When patients call and cancel appointments, don't tell them how this disrupts your schedule or that you are glad because you need the time. This makes them feel as though they are a burden of which you are glad to be relieved. Simply thank them and express your appreciation for their thoughtfulness.

—Be particularly careful in handling complaints. (If the foregoing suggestions have been observed, you shouldn't have too many.) If you do have a complaint, it is wise to observe the following:



Listen attentively. Even though you may have heard the same story many times, listen as earnestly as though this is something new; don't interrupt. Let the patient have a full hearing. If you interrupt, you imply that his complaint isn't worth listening to and that you already know more about it than he does;

Get the patient's name early in the interview, get it correctly and be sure to address him by name. Don't treat the patient as another register number or his complaint one of many;

Whether the complaint is justified or not, apologize for any inconvenience or trouble that may have been caused;

Even if the patient is wrong, don't make him feel foolish by a lengthy explanation as to why he is wrong. He will resent it.

—Don't argue with patients. Even though you are right and win the argument, you lose the respect of the patient.

Courtesy in the clinic will not be automatic with the mechanical application of the above rules—it must be sincere and spontaneous. All personnel in the Medical Department are performing a public service and should, therefore, do it in a polite, courteous, and cheerful manner that will truly reflect the quality of the professional care given.

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#### Instruction by Closed Circuit TV

At the National Naval Medical Center, Bethesda, Md., closed circuit television was recently employed as a technique for simultaneously teaching an entire class in "The Care and Use of Lens Measuring Instruments." With the cooperation of the Television Project of the Center, the Ophthalmic Technician School of the Naval Medical School presented the lecture demonstration in the TV studio for viewing by the students in a remote classroom.

Instruction in lens measuring instruments presents a difficult problem to the classroom teacher because of the many small details of operation. In this instance, through television, all students were able to view the various dials and working parts as they were described and demonstrated by the lecturer. In addition, all students could clearly see the target patterns for various types of lenses as though they themselves were looking through the eyepiece of the instrument. The facility of TV in bringing out small details in operation of these instruments was clearly demonstrated.

Other programs are in the planning stages; plans include making a video tape of this presentation for repeated use for future classes.

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American Board of Obstetrics and Gynecology  
Examinations - Part I

The next scheduled examination—Part I, written—of the American Board of Obstetrics and Gynecology will be held in various cities of the United States, Canada, and military centers outside the Continental United States on Friday, 13 January 1961.

Candidates submitting applications in 1960 for the 1961 examinations are not required to submit Case Reports as previously required to complete Part I Examinations of this Board. In lieu of this requirement, new candidates are required to keep in their files a duplicate list of hospital admissions as submitted with their application for submission at the annual meeting in Chicago should they become eligible to take the Part II (oral) Examinations.

Reopened candidates will be required to submit Case Reports for review 30 days after notification of eligibility. Candidates scheduled for Part I and those resubmitting Case Reports are required to submit their reports prior to 1 August each year. Current Bulletins may be obtained by writing to the office of the Secretary-Treasurer, Robert L. Faulkner, M. D., 2105 Adelbert Road, Cleveland 6, Ohio.

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Declassification of Documents

In consonance with the intent of OpNav Notice 5500 of 12 December 1959, to remind on a continuing basis all officers and civilian employees of the Navy Department who create classified documents or are responsible for subsequent declassification of the burdens resulting from over classification or failure to declassify, the following points to be considered are presented:

"Prompt declassification of documents which no longer warrant security protection is necessary for the integrity of the security classification system, and for easier handling of such documents. Make it a point to take declassification action whenever you have an opportunity to do so.

If you work regularly or even occasionally with classified documents, you may have an idea for a suggestion which could simplify or otherwise benefit the system of storing or handling such material. If so, please submit such suggestions through the established system. Your supervisor or personnel office will be glad to cooperate and you may be eligible for a cash award, in addition to having the satisfaction of being responsible for a worthwhile improvement. "

Board CertificationsAmerican Board of Ophthalmology

LT Arthur S. Kern MC USN

LT Thomas P. Wood Jr, MC USNR

American Board of Pathology

LCDR Thomas S. Johnson MC USN

American Board of Pediatrics

LT Barry M. Josephson MC USNR

LT Harry T. Wright Jr, MC USNR

American Board of Physical Medicine and Rehabilitation

CDR Anton A. Tratar Jr, MC USN

American Board of Preventive Medicine in Aviation Medicine

CDR David P. Morris Jr, MC USN

American Board of Radiology

LT Donald I-Chung Sun MC USNR (in Nuclear Medicine)

LT Maxwell D. Lai MC USNR (in Nuclear Medicine)

LT Thomas R. Marshall MC USNR (in Nuclear Medicine)

LT John B. McCoy MC USNR (in Nuclear Medicine)

CDR William M. Strunk MC USN

LT John W. Travis MC USNR (in Nuclear Medicine)

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From the Note Book

Medical Department Flag Selections. Selection of two Navy Medical Corps and one Dental Corps Captains for promotion to the rank of Rear Admiral was approved by President Eisenhower on 2 August 1960. Those selected were: Captain Harold J. Cokely, Commanding Officer, U.S. Naval Hospital, St. Albans, N. Y.; Captain Langdon C. Newman, Commanding Officer, Naval School of Aviation Medicine, Naval Aviation Medical Center, Pensacola, Fla.; and Captain E. G. F. Pollard, Commanding Officer, Naval Dental School, National Naval Medical Center, Bethesda, Md.

Mercy Mission. In response to an appeal from a child's physician at St. Luke's Hospital on the island of Malta for 6 bottles of plasma not locally available, the U.S. Naval Station Hospital at Naples arranged to have the plasma flown to the island and the vital plasma was delivered to the physician within 6-1/2 hours from the time the appeal was received.

Congress on Industrial Health. Representatives of industry, agriculture, medicine and governmental agencies will gather in Charlotte, N. C., 10-12 October 1960 for the 20th Annual Congress on Industrial Health. Sponsored by the AMA Council on Occupational Health, the Congress is a means of furthering the development and maintenance of high medical standards in the field of occupational health. Military personnel who have a responsibility for, and an interest in, various phases of occupational health will find much of interest in this 3-day program. Problems such as mental and emotional health, dermatitis, and general occupational health problems in small employee groups will be covered. (AMA Release)

Side Reactions of Furaltadone. Attention has been invited by one of the pharmaceutical houses to significant side reactions recently encountered in use of the new systemic antibacterial, furaltadone. Occurrence of these reactions prompted a drastic revision of the labeling of their product. Neurological manifestations (including ocular muscle disturbances), thrombocytopenic purpura, and a serious alcohol-furaltadone reaction have been among the disturbing side effects observed. The notice specifically called attention to the fact that use of the drug should be confined to infections that are not amenable to other drugs now available, and should not be administered for more than 14 days.

Smoking and the Digestive Tract. It is commonly accepted that tobacco stimulates acid secretion of the stomach. However, it is less commonly considered that nicotine stimulates increased motility of the entire digestive tract as well. In the author's program of management of ulcerative lesions of the digestive tract—peptic ulcer disease as well as ulcerative disease of the lower bowel—there is no place for use of cigarettes. (J. Bargaen, Staff Meetings of the Mayo Clinic, June 22, 1960)

Hiatal Hernia. The need for a standardized technique for roentgen study of the cardioesophageal area is emphasized. One such technique is presented by the authors. Because of the clinical importance of the problem of hiatal hernia the authors stress that information about the incidence of the condition, the frequency with which it causes symptoms, and the basis for these symptoms when they occur, must be pursued. (H. Tumen, et al, Gastroenterology, June 1960)

Leukemia after I<sup>131</sup>. The authors report two cases of acute monocytic leukemia developing after treatment of hyperthyroidism with radioactive iodine, bringing to ten the number of such cases. They conclude that the reassurances that have led to wide and liberal use of radioactive iodine therapy in hyperthyroidism need critical reexamination. (T. Burns, et al, Arch Int Med, July 1960)



Black Widow Spider Poisoning. Methocarbamol (Robaxin) was used, in addition to treatment along previously accepted lines, in treatment of a patient with black widow spider poisoning. Immediate relief was obtained. Further trials with this muscle relaxant should be made. (J. Li, JAMA, June 11, 1960)

Cancer Cells in Blood. On controlled studies, the authors observed cancer cells in the peripheral blood of from 25 to 37% of patients with malignancy, when employing their simplified cancer cell separation technique. They noted increased numbers of cancer cells after operative manipulation, physical examination, and certain special diagnostic procedures. Administration of corticotropin in two instances was followed by no change in the numbers of cancer cells in the blood. (L. Long, et al, Arch Surg, June 1960)

Colchicine for Bronchogenic Carcinoma. Colchicine has long been known to have cytotoxic, anti-mitotic, and anti-tumor properties. With a new intravenous preparation of colchicine being available, the authors treated 20 patients with inoperable pulmonary cancer; half of the group also received irradiation. The colchicine-irradiation treated group seemingly fared better but this could possibly have been due to the effects of radiotherapy per se. Colchicine may merit further study as an additional tool to be used in conjunction with other measures. (S. Cohen, J. Johnson, Dis Chest, July 1960)

The Smaller Twin. A newborn infant would receive 75 to 100 ml of blood from the placenta and cord if it were lowered below the level of the placenta after delivery. In case of homologous twin pregnancy, if the firstborn is small, a delay in clamping the cord is advised, so that the fetus receives at least 100 to 150 ml of blood from the common placenta. If the first child is large and healthy, immediate clamping of the cord is advised, so that the second twin within the uterus may benefit by the extra placental blood after the first deliver. (M. Berling, J Int Coll Surg, July 1960 (Section I))

Surgical Convalescence. Opinions of surgeons regarding the proper duration of the uncomplicated postoperative convalescent period in otherwise healthy men and women vary widely. The authors suggest that the patient be directed to increase his activities gradually to his usual level and return to his work when he feels fit to do so. A specific forecast or recommendation concerning the duration of convalescence should not be made. (F. Dohan, et al, Surg, Gynec & Obst, July 1960)

Furazolidone in Giardiasis. Giardiasis may lead to acute or chronic enteritis, and seems to be more severe in children. Using furazolidone (Furoxone), the authors found it to be a valuable agent for treatment of the infestation. (B. Webster, Amer J Dig Dis, July 1960)

**RESERVE****SECTION**

Uniform Regulations Clarified for  
Inactive Duty Reservists

Puzzled over when to wear your Reserve uniform? Here is a roundup of the rules based on the latest changes in U.S. Navy Uniform Regulations:

Officers and enlisted personnel not on active duty shall wear uniforms (1) when associated with or attached to a Selected Reserve unit and attending a drill, (2) when performing active duty for training, with or without pay, and the necessary travel in connection with ACDUTRA, and (3) when performing duties under appropriate duty with pay orders and the necessary travel in connection with these duties.

Reservists ordered to active duty (including ACDUTRA) shall, of course, wear the prescribed uniform.

Reservists on inactive duty may wear their uniforms on certain occasions of ceremony—including military funerals, memorial services and inaugurations, and patriotic parades on national holidays, or other military parades or ceremonies in which any active or Reserve U.S. military unit is taking part.

Officers not on active duty may wear their uniform when engaged in the instruction of a cadet corps or similar organization at approved naval or military academies or other approved institutions of learning.

Inactive duty Reservists residing or visiting in a foreign country may not wear the uniform except when attending, by formal invitation, ceremonies or social functions at which the wearing of the uniform is required by the terms of the invitation or by the regulations or customs of the country.

Wearing of the uniform is prohibited (1) at any meeting or demonstration which is a function of, or sponsored by, any organization, association, movement, group or combinations of persons which the Attorney General of the United States has designated as totalitarian, fascist, Communist, or subversive, or as having adopted a policy of advocating or approving the commission of acts of force or violence to deny others their rights under the Constitution of the United States, or as seeking to alter the form of government of the United States by unconstitutional means, (2) in connection with non-military activities of a business or commercial nature, and (3) under any circumstances which would tend to bring discredit or reproach upon the uniform. (The Naval Reservist, June 1960)

### Tissue Bank Training Course

A two-week course in Tissue Bank Training will convene on 3 October 1960 at the Naval Medical School, National Naval Medical Center, Bethesda, Md. This course provides orientation in the operation and administration of a tissue bank. It includes indoctrination in the methods of tissue procurement; storage and dispensing; tissue culture; tissue chemistry; processing excised tissue and allied short and long-term research projects in the tissue culture and tissue chemistry fields. It also includes indoctrination in the medico-legal aspects of homotransplantation, the procedure for obtaining permission for tissue donations, familiarization with the operation of the Tissue Bank Registry and all other administrative practices associated with tissue banking.

Inactive Naval Reserve Medical Corps officers are eligible for this course. Billets are available upon request from commandants of all naval districts (less 10, 14, 15, and 17). BOQ facilities are limited and available on a first-come, first-served basis. Security clearance is not required.

Interested, eligible Medical officers should request this training well in advance of the convening date.

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### Medical Department Orientation

Medical Department Orientation consists of two weeks on-the-job training at any naval hospital and is available to Naval Reserve Medical Department officer personnel, male and female, who have had no previous active duty or active duty for training.

This training is intended to indoctrinate and orient the Naval Reservist in the operation and function of the Medical Department and the Navy.

Convening date will be arranged between the commandant, trainee, and commanding officer of the naval hospital.

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### A Reminder

Commands must be notified of change of mailing address. When you move or change your mailing address, you are requested to notify the holder of your official Naval records of your new address. A temporary change of residence of 6 months or less does not require a change of address. However, if you have a temporary address and mail cannot be delivered promptly to your temporary address, you should notify the holder of your records of your address at the beginning and end of your temporary residence.

**DENTAL****SECTION**Gingival Healing Following Surgical Curettage

A study was made of the healing process after subgingival curettage of the maxillary teeth in five patients between 30 and 40 years of age. The patients selected for study displayed generalized gingivitis with marginal alveolar bone resorption and concomitant periodontal pockets ranging in depth from 3 to 7 mm. Clinical photographs, roentgenograms, and biopsies were made of two patients daily for 10 consecutive days. The following findings were noted:

1. After complete surgical curettage, organization of granulation tissue starts at once.
2. Proliferation and regeneration of subepithelial connective tissue begins from 12 to 24 hours after complete curettage.
3. Apical proliferation of crevicular epithelium appears to be inhibited by granulation tissue formation.
4. Apical proliferation of the epithelial lining of the periodontal pocket does not occur until a base of reticular and collagenic fiber formation starts in about 4 to 6 days after surgical curettage.
5. When indicated, recurettage should be delayed 8 to 10 days after healing has taken place.
6. Microscopically visualized healing after curettage is nearly complete at the end of 10 days in well nourished healthy patients.
7. The tissues of the gingivae and periodontal pockets appear to heal faster after surgical curettage than after other surgical procedures, such as gingivectomy.

(J. L. Blass, T. Lite, New York State Dental Journal, 25: 127-134, March 1959)

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My Study Hour

In trying to fulfill the requirements of a good continuing education program, the American College of Dentists has proffered a thought for consideration. That thought carries the title, "My Study Hour." The word "My" is in there for one purpose and that is to convey the idea that a study hour is a very personal thing.



Would you reflect back for the moment on your days of youth? Think of the days when you were in school and the amount of time that was needed for your personal study. Keep in mind that this personal study was almost a necessity in order to keep up your work in school and to pass your studies. Also, think how many years you did this and how it became a regular part of your life.

It has always been my contention that if a person would give one-tenth of the time to study after he finished school that he did while in school, then the progress of the world would be unlimited. And this could well be in any profession or business. Too many people are inclined to stop any study effort the day after graduation.

A good long time ago, I was chastising one of my own classmates from dental school for not attending our local dental meetings. He replied quickly that he had gone to school all his life and that when he finished dental school and passed his state board he took a vow that he would never go to another meeting nor spend any more time on the books! He vowed that he was in the position of not having to attend lectures nor read scientific material for the rest of his life if he didn't want to. Needless to say, he has pretty well kept that vow. I have wondered to myself so many times if he is really happy. I seriously doubt it.

I wonder just how happy so many men are who have taken that position. It takes a lot to satisfy the ego of some people and I don't believe any of the Fellows of the American College of Dentists could have their ego satisfied if they did not have a little curiosity about the new concepts and developments in dentistry.

Now let's be a bit practical—most program chairmen of dental groups do their best to present varied programs to keep us abreast of the times. If we have the inclination to attend dental meetings, and will attend enough of them, we will sooner or later be exposed to modern day dentistry.

In my opinion the written message is here to stay in spite of all attempts to replace it.

While attending the Joint Conference of the Council on Journalism and the American Association of Dental Editors this spring, I heard speakers from the faculty of Medill School of Journalism of Northwestern University. They did a good job of convincing me that by the greatest stretch of imagination perhaps not over 3% of our dental journals are completely read. Then we spent the rest of their part of the program listening to their explanation why. One of the many reasons was—no planned time for reading.

Your committee on Continuing Educational Efforts is strongly suggesting and urging that you plan your day such that you can set up a period known as "My Study Hour." You can set whatever hour you like. At home or at the office. Wherever you prefer it, if you would plan it for five days a week you would be amazed at what you could accomplish.

I was relating to a group not long ago that my professor in Ethics and Jurisprudence in school did such a good job in his course that I distinctly feel his presence in my treatment room to this very day. I can imagine his examining all the dentistry that I do—I can imagine his listening to every word that I tell my patient. I don't believe I could go to sleep at night unless I felt that I was offering my patients my best ability. That "best" implies that I am staying abreast of times—that I am staying informed.

You may ask, now just what do you expect me to read during my study hour? I don't believe it makes a whole lot of difference. The main thing is to have some planned time. If you do that, then I feel that at least you will open your journals and glance through them. If you want to use it to increase your knowledge of major league baseball, to study the financial structure of your church, or to review your Rotary Club activities, or to review your insurance program—that is your privilege. It is our feeling that with the planned time you will eventually stay pretty well informed on many aspects of living.

The public has a right to expect that their dentist is an informed person. One of the aspects of being informed calls for reading and study. I believe you will find the creation of a regular study hour will answer this challenge. Let's put it this way—try staying informed the planned way. Plan your study hour and then stick to it—all it takes is a determination that you will do it. I believe you will find yourself a much happier person if you will give our plan a try. (E.J. Cooksey, Journal of American College of Dentists, 26: 297-299, December 1959)

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Congressman Judd's Address at  
the Naval Dental School

Congressman Walter H. Judd of Minnesota, one of the foremost authorities on this country's foreign policy, spoke at the graduation ceremonies held on 1 July 1960 for Naval Dental officers who had completed training at the U.S. Naval Dental School, National Naval Medical Center, Bethesda, Md. Congressman Judd was welcomed to the Center by RADM F.P. Kreuz MC USN, Commanding Officer, and CAPT E.G.F. Pollard DC USN, Commanding Officer of the Dental School.

Dr. Judd, a physician who spent 10 years in China as a medical missionary, addressed the graduates as members of a profession closely allied to his own. During the address, he stated that our country needs men with the trained habits of mind of physicians, dentists, and scientists, who can understand the unchanging nature of communism. He likened communism to a cancerous growth. Just as cancer always acts like cancer, communists always act like

communists. We Americans, he said, must fight this "virus of evil" by spreading a "good virus" of independence and self-reliance among the peoples of other countries. Dr. Judd said that he envied the graduates, for they will be able to act as ambassadors of good will from this country.

Following Dr. Judd's speech, Rear Admiral Kreuz presented certificates to 28 graduates of the General Postgraduate Course given at the Naval Dental School, and to 6 officers who had completed residencies or specialized courses in prosthodontics, periodontics, oral surgery, or maxillofacial prosthetics.

LCDR Thomas A. Garman received the Commanding Officer's Award for Excellence in Operative Dentistry. Also singled out for special recognition were the ranking members of the postgraduate class, LTs W. R. Shiller, G. M. Bowers, and L. R. Pistocco DC USN.

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#### Personnel and Professional Notes

Viral Hepatitis Prevention. There have been reports of many well documented cases of viral hepatitis following use of non-sterile needles and syringes, or other instruments contaminated with blood. It is known that 0.01 ml of serum containing hepatitis virus is infectious. It has not been demonstrated that this virus is reliably destroyed by chemical agents commonly employed for disinfection. The Council on Dental Therapeutics of the American Dental Association recommends that instruments which may penetrate soft tissues, especially needles used for injections, should be sterilized in an autoclave at 121 C for 15 minutes. Because blood may be drawn into the syringe inadvertently as a result of back pressure, or intentionally during pre-injection aspiration procedures, barrel and plunger type syringes should be treated in the same manner. (Accepted Dental Remedies, 1960, p. 87)

Navy Leadership Program Results. During Fiscal Year 1959, there was a significant reduction in court martial cases tried throughout the Navy and Marine Corps—32% in general, 27% in special, and 10% in summary; unauthorized absence cases were reduced by 17.3%; and desertion cases decreased by 30%. Numerous factors have combined to produce such unusual figures, especially unusual in light of recently released FBI statistics which show a great increase in juvenile crime. One of the most important contributing influences in this reduction is the more effective naval leadership program instituted by the Secretary of the Navy in General Order 21 of 17 May 1958 which called for revitalization of traditional naval leadership with emphasis on morale aspects. A current, continuing, and intensive program to carry out General Order 21 now permeates the Navy. From the youngest petty officers to the most senior leaders, a new personal interest is being directed toward the young men in the Navy. (JAG, Annual Report 1959)

CAPT Sandman Presents Clinic. Partial Denture Planning was the subject of a clinic during the recent Newfoundland Dental Society meeting held in St. John's, presented by CAPT G. H. Sandman DC USN, Senior Dental Officer at the U. S. Naval Station, Argentia, Newfoundland. The president of the Canadian Dental Association, Dr. W. H. MacIntosh, also appeared on the program.

Dr. Brashear Lectures at Cherry Point. Dr. Alton Brashear, Professor of Anatomy, Medical College of Virginia, guest of the 12th Force Dental Company (Aviation) commanded by CAPT R. J. Wallenborn DC USN, recently presented an illustrated essay, Anatomical Problems in Local Anesthesia, at the Marine Corps Air Station, Cherry Point, N. C. Dr. Brashear discussed the efficiency, toxicity, and practicability of various local anesthetic agents, as well as the role of anatomy in the successful attainment of local anesthesia, with emphasis on common anomalies and their probable effect on anesthetic technique. He additionally discussed the current status of audio-analgesia. Dental officers from Camp Lejeune and members of local civilian dental societies also attended.

Plaque of Merit for CAPT Kaires. A plaque of merit for "outstanding and meritorious services to the Philippine Dental Association in particular and to Philippine dentistry in general" was presented to CAPT A. K. Kaires DC USN, Senior Dental Officer, U. S. Naval Station, Sangley Point, during the 52nd annual convention of the association recently held in Manila. A member of the Armed Forces Dental Society of the Philippines, CAPT Kaires is an honorary member of the Philippine Dental Association.

CAPT's Cooksey and Huebsch to Present Papers. CAPT D. E. Cooksey, Consultant-Instructor in Oral Surgery, U. S. Naval Dental School; and CAPT R. F. Huebsch, 2nd Dental Company, Camp Lejeune, N. C., will present papers at the 42nd annual meeting of the American Society of Oral Surgeons to be held 12 - 15 October 1960 in Phoenix, Ariz. Diplomates of the American Board of Oral Surgery, CAPT Cooksey will discuss Radical Antrostomy Associated with Closure of Antral Fistula; CAPT Huebsch will discuss the Cause, Prevention, and Treatment of Alveolar Osteitis.

Honolulu County Dental Society. Problems in General Dentistry was the subject of a panel discussion before the Honolulu County Dental Society at Camp Smith by Navy Dental officers on duty in the Honolulu area. Participating were CAPT B. H. Faubion, Moderator; CAPT V. J. Niiranen, Prosthodontist; CAPT H. G. Green, Oral Surgeon; CDR R. H. Stowell, General Practitioner; and LCDR O. W. Donenfeld, Periodontist. The Moderator presented various problems which were discussed by panel members in reference to their particular specialties.



## AVIATION MEDICINE DIVISION



### Vision at High Altitude

#### Introduction

The problems of vision in flight at high altitude which are related neither to decompression of the pilot and lack of oxygen, nor to the high speed of the aircraft, are caused by an environment which differs so markedly from that encountered at lower altitudes that the visual system, admirably suited for a purely terrestrial existence, becomes unable to function satisfactorily.

The change in the environment which gives rise to difficulties in vision is due simply to the fact that at high altitude one has partly traversed the earth's atmosphere.

Because the brightness of the sky is caused essentially by scattering of light by atmospheric particles, the layer of atmosphere above the earth is visible as a bright layer. At any height in this layer the brightness of the sky is proportional to atmospheric pressure. Thus, at lower altitudes the sky is brighter, and the difference in brightness between 20,000 and 30,000 feet is very much greater than the difference in brightness between 60,000 and 70,000 feet. Equal increases in altitude are, therefore, accompanied by progressively smaller changes in sky brightness. If viewed from space, the earth would be seen to be surrounded by a bright envelope of atmosphere whose luminance was greatest near the surface of the earth.

#### Reversed Light Distribution

In flight at high altitude one partly traverses this envelope of bright atmosphere; most of the light instead of being above, as normally, now comes from below. To experience this situation it is not necessary to fly very high, even at 40,000 feet one has already traversed four-fifths of the atmosphere and the reversal of light distribution is consequently evident.

Below the aircraft there is usually a well marked cloud floor, but even if there is no cloud present there is at least a bright layer of haze below. Above, the sky is frequently cloudless and light blue in color near the horizon, becoming progressively darker blue towards the zenith. At any given altitude, on some days the blue sky may be much darker than on others. These variations in sky brightness depend upon the height of the tropopause on that day.

The difficulties in seeing are caused by changes in the appearance of the sky when viewed from above the tropopause rather than when viewed from a definite height above the surface of the earth.

The traversing, or partial traversing, of this layer of atmosphere has two principal effects: first, the bright "sky" is below eye level of the observer as a result of which light floods unhindered into the eyes giving rise to the sensation of glare, principally by reason of the scattering of this light in the intraocular media. Shielding the eyes from the glare source below brings about improvement in visibility by reducing the glare effect. Under normal conditions, at ground level or at low altitudes, such glare conditions seldom exist because light from the sky is prevented from reaching the eyes directly in great quantity by the fact that the eyeballs are recessed behind the overhanging brow and eyebrows. An effect similar to high altitude glare effect may be obtained at ground level when travelling over snow.

When flying towards the sun with the instrument panel in shadow, it may be very difficult to discern the pointers and markings on instrument dials. This problem occurs at any altitude, but it is more frequently seen and is more troublesome at high altitude, especially in aircraft in which the instrument panel is recessed behind a cowl.

To a certain extent difficulty is caused by the physical increase in contrast between the bright exterior scene and the dark instrument panel. The most important factor in producing this difficulty, however, is the effect of the high brightness of the peripheral field of vision in lowering the sensitivity of the retina so that the instrument panel in shadow appears to be even darker. This effect is known as dazzling glare.

When in both cases—veiling glare and dazzling glare—the eyes are shielded from the glare source, an improvement in visibility takes place and the sensation of haze caused by the light scattered within the eye disappears.

### Empty Visual Field

The second group of problems is caused by the absence of cloud or of focusable detail in the part of the visual field above the horizon. It has been decided to call this visual field an "empty" visual field since it is devoid of visible detail. An empty visual field, however, need not be devoid of light and so the empty visual field may have brightness. Examples of a naturally occurring empty visual field are: clear blue sky, total darkness, completely and uniformly overcast sky, haze, or fog.

It has been found that absence of detail at infinity in an empty visual field renders it impossible to adjust the eyes with any certainty for a focus at infinity. When no definite object is being fixated, as when one is searching in an empty visual field, the point at which the eyes are focused is constantly changing. In general, however, the point of focus fluctuates about a

given level; in the case of a long sighted individual, the point of average focus may be beyond optical infinity. He may thus be focusing rays of light which are converging towards his eye. The individual who is only slightly long sighted (by about 1-2 diopters) will probably have an average point of focus about optical infinity so that he will be most suited to search in an empty visual field. In the emmetropic or optically normal eye, it is not possible to focus beyond optical infinity, and when this eye views an empty visual field the average focus is nearer than infinity so that, under these conditions, the emmetropic eye becomes virtually short sighted. Likewise, the short sighted individual becomes even more markedly short sighted under empty visual field conditions.

It must be emphasized that the accommodation or focusing mechanism is in a state of constant activity and is seldom stationary at any one level, particularly when an empty visual field is being observed. The best and most stable value which can be hoped for under these conditions is that which has been referred to earlier as the point of average focus.

Realizing that there is difficulty in focusing at infinity, an individual may make a voluntary effort to look in the distance. This effort can never cause the eye to relax further than its natural resting level and, on the other hand, frequently causes accommodation to increase so that eventually the point of focus may be much nearer than it would be if no voluntary effect had been made.

It is thus not possible to state that a given individual whose eye has a certain refraction will be focused at a certain distance during search in an empty visual field. One can merely state in broad terms that under the best conditions possible the slightly long sighted subject will have most advantage because he may be focused at infinity, whereas the normal sighted and the short sighted individual both become more short sighted or myopic. The very long sighted individual may be as badly placed as the emmetrope and myope since he may focus beyond optical infinity.

Thus, when searching in an empty visual field, it seems to be largely a matter of luck whether an individual focuses his eyes for infinity or not. He can with training learn not to make the voluntary increase in accommodation and to allow his eyes to relax. He cannot, however, without a stimulus at infinity, overcome the empty field myopia which makes him focus one or two meters away instead of at infinity.

It is clear that some aid is necessary to enable subjects to focus at optical infinity which, as far as the eye is concerned—with a pupil size of 2 or 3 mm—may be regarded as being about 30 feet from the eye. Looking at another aircraft will, therefore, automatically make the eye focus at infinity. Again, however, one must remember the subject who is very long sighted for he, looking at an object 30 feet away, may voluntarily throw it out of focus so that his eyes focus at a point beyond optical infinity. Thereby he may lose the advantage gained by the presentation of the target at infinity, and be at the same disadvantage as the emmetrope or myope.



Consequently, it is necessary to learn to use the eyes when searching in an empty visual field, either with the help of some aid, such as an optical device which projects a pattern at infinity or when using an object in the foreground, such as a wing tip or other aircraft. It is important to realize that it is impossible for the emmetrope to focus at infinity in the absence of a stimulus of detail at infinity. Any effort which might be made by the subject succeeds merely in causing his point of focus to come much nearer than the average resting position he could achieve when looking at an empty visual field. Thus, at high altitude, when one searches in an empty sky for another aircraft, if an effort is made to overcome the appreciable difficulty in focusing, one frequently finds that he is suddenly focused on the small specks of dirt on the windscreen, apparently because the point of focus has gradually approached as the efforts were being made to relax accommodation further.

The second factor associated with vision in an empty visual field is that of determination of distance, of size, and of angular relative speed of an object once it has been detected. Everyone is familiar with the appearance of the moon when it is at the zenith as compared with its appearance when it is low on the horizon of the night sky. In the latter case, it appears very much bigger probably because one sees it closely related to a background of known objects, such as the roofs of houses and the outlines of trees. At the zenith it seems to be much smaller because it is unrelated to objects of any known size in the immediate field of view. Likewise at high altitude, once the target aircraft has been detected, it appears to be much smaller and, therefore, further away than it is in fact. In consequence, distances from one aircraft to another are frequently overestimated.

Because of the absence of background against which the target can be seen at high altitude, it is virtually impossible to judge as accurately as in lower altitudes the speed of the target relative to one's own speed. This is due to the fact that the relative speed can be judged only by parallax displacement by the relative movement of the target against a background of clouds.

## Conclusions

Veiling glare and dazzling glare may be successfully attenuated by shielding the eyes from the bright exterior scene, such as when wearing an antiglare visor or other device which allows an uninterrupted view of the instruments while attenuating the light coming to the eyes from the exterior scene.

Veiling glare may be further attenuated by avoidance of even mild anoxia, such as that which affects night vision. As in night flying, oxygen could, therefore, be used to advantage from ground level.

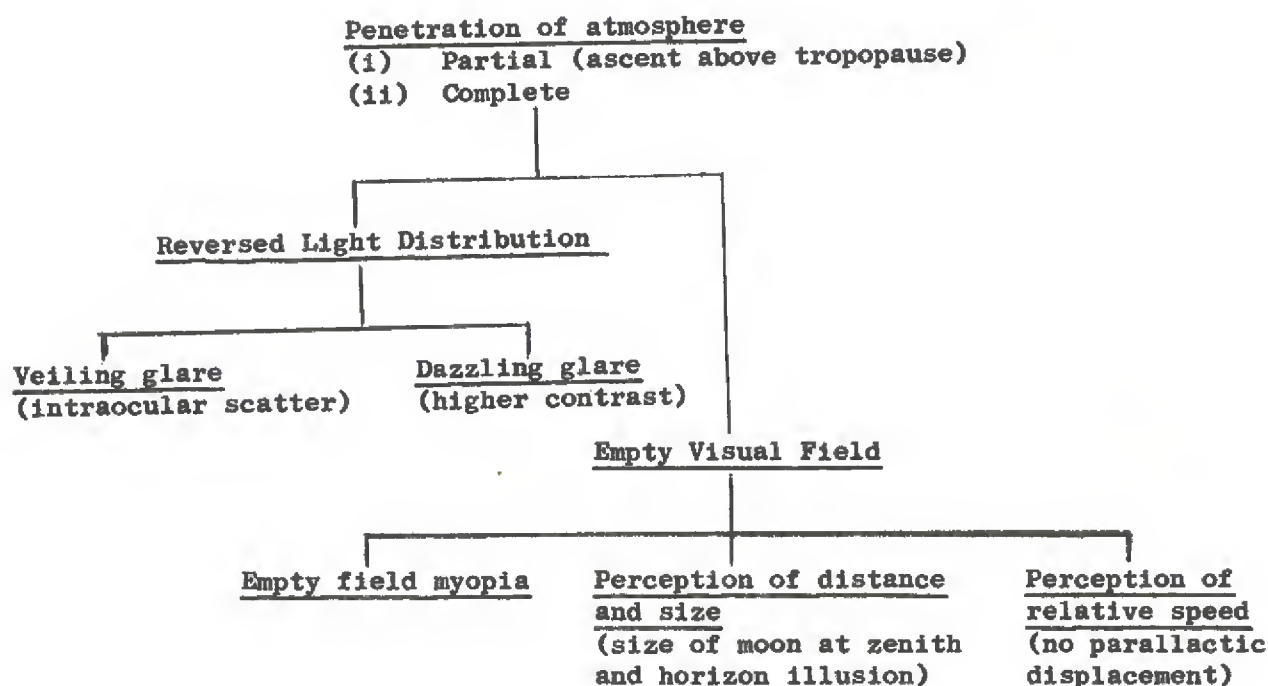
Dazzling glare may be further reduced by illuminating the interior of the cockpit by day either with artificial light or by allowing more light from



the cloud floor below to fall or to be reflected onto the instruments and controls.

Empty field myopia is involuntary and, as a result of it, the emmetrope can be made to focus at infinity only with the help of either an optical device which projects a fixation object at infinity, or by looking at some object at least 30 feet away—for example, the wing tip of another aircraft.

### ENVIRONMENTAL CHANGES RESPONSIBLE FOR PROBLEMS OF VISION AT HIGH ALTITUDE



A horizontal line is a poor stimulus to cause one to focus at infinity so it may well be that empty field myopia occurs not only in searching an empty visual field, but also when searching the horizon, either in flight or at sea. Of collimated patterns, the most suitable is that which approximates as closely as possible in size and appearance the target being sought.

Empty field myopia is believed to reduce the maximum visual pickup range by one-half.

#### Summary

Visual problems at high altitude are caused by traversing or partly traversing the bright layer of atmosphere. This gives rise to:

- A. Reversed light distribution (cloud floor, layers of haze below)
  - 1. Veiling glare (intraocular scatter)
  - 2. Dazzling glare (high contrast between brightness of exterior scene and darkness in the cockpit)
- B. Empty visual field (absence of cloud or haze above the horizon or tropopause )
  - 1. Empty field myopia
  - 2. Impaired judgment of size and distance
  - 3. Impaired judgment of speed (absence of parallax displacement)

(Wing Commander T. C. D. Whiteside, RAF Institute of Aviation Medicine, Vision at High Altitude, FPRC 910)

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### Lighting Up the Flight Deck

It appears that the accident rate for both landing of aircraft and flight deck handling crews is almost four times as great during night carrier operations as during daylight operations. Also, more men fall overboard during night operations than during daylight operations. It is reasonable to assume that this difference in accident rate is entirely due to a lack of ability to see the surrounding area. During World War II, carrier flight decks were kept in complete darkness for fear of revealing their presence to the enemy and also, to assure that the aviators concerned preserved their scotopic vision.

Tacticians indicate that a lighted flight deck is relatively unimportant in modern warfare because radar would reveal the presence of the ship long before the lighted flight deck would do so. Tactics is not a primary concern of the flight surgeon; however, physicians can do much to clear up some misconceptions about vision at night. To deny adequate lighting on a flight deck on the theory that rod vision must be preserved for aviators who are taking off is a misconception. One look at the flame of an after burner or at the running lights of a preceding plane will completely deprive an aviator of his vision.

On the other hand, an intensity of lighting on a carrier flight deck which would allow people to see what they are doing at night should not affect the photopic or cone vision of an aviator taking off to any greater extent than the flame of an after burner or the flash of running lights of the preceding plane.

Finally, many aviators feel that a pilot being catapulted at night would be much better off if he would use his instruments entirely and not put any

faith in the horizon which sometimes can be seen at night with cone vision. If well qualified aviators do not wish to have carrier decks dimly lit at night, then it is not appropriate for flight surgeons to ignore their professional opinion. However, the flight deck is an industrial hazard and the question boils down to whether a dark flight deck is so necessary to the aviator to justify risking life or limb to get it. It is desired that the flight surgeons make sure that pilots are fully informed about night vision. This will allow them to make their decisions on scientific facts rather than misconceptions. Flight surgeons can surely attest that even a dimly lighted flight deck is at least 400% safer than a black one. (CAPT J. T. Smith MC USN, Force Medical Officer, ComNavAirLant)

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#### Chloroform Health Hazard

Occupational health hazards are continuing problems for recognition and prevention. Many methods and procedures may be unwitting sources of serious danger. A potential health hazard of special interest was recently reported from the Naval Air Station, Alameda, Calif.

Aircraft instrument bearings were being cleaned with atomized chloroform during routine overhaul in the instrument shop. The operation was being performed in small exhaust ventilated enclosures. However, there was always a small amount of vapor escaping into the workroom due to rebound and turbulence inside the hood. Because the threshold limit value for chloroform had been recently revised downward to 50 ppm, the amount of contamination in the bearing cleaning operation was reassessed with the new and lower limit as the base.

It was found that the limit was being exceeded during most of the active cleaning cycle. The average concentration of chloroform in the operator's breathing zone was found to be 80 ppm. The exhaust system was obviously not capable of insuring the maintenance of the lower safe limit. It was recommended that the hoods be redesigned and reshaped to admit a greater quantity of air and lessen the rebound of the solvent particles. Increased fan capacity did not appear to be indicated at that time.

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#### OPNAV INSTRUCTION 1560.1B

5 July 1960

Subj: NAVAL AVIATION NEWS: Submission of articles for

Regular submission of news and feature items from aviation activities to Naval Aviation News is desired. This instruction details procedures for submission of such articles.

### Retirement of Captain Charles F. Gell

Captain Charles F. Gell MC USN retired from active duty in the Navy on 31 April 1960 after twenty-three years as a Naval Medical officer, Flight Surgeon, and Naval Aviator. Serving continuously in research activities during the past twelve years of his Naval career, Captain Gell has been the recipient of a Secretary of the Navy citation, the Institute of Aeronautical Sciences' John Jeffries Award, the Aerospace Medical Association's Lyster Award, and the Astronautical Society's Melbourne Boynton Award for excellence in aerospace medical research.

Upon his retirement, Captain Gell received a certificate of exceptional service from the Surgeon General of the Navy, the certificate being formally presented by the Chief of Naval Research. On 1 May 1960, he assumed the duties of the Chief of Life Sciences, Vought Astronautics Division, Chance Vought Aircraft, Inc., Dallas, Texas.

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